

Claims

1. Turbine (1), in particular a gas turbine, which along a swivel-mounted rotationally symmetrical rotor (2) has a compressor (3), a
5 combustion chamber (5) and a turbine section (7) formed of a plurality of turbine stages (15), in which each turbine stage (15) comprises mutually interacting blades (17) and vanes (16) which can be surrounded by a flow of hot working fluid (13),
with a coolant provided by the compressor (3) for cooling the blades
10 (16, 17), which can flow in a channel along the rotor (2) from the compressor (3) to the turbine section (7) and into which a liquid can be introduced for cooling,

wherein

the channel extends outside the rotor (2) and that the liquid can be
15 introduced into the channel in a region close to the compressor.

2. Turbine (1) according to Claim 1,

wherein

the channel runs along the rotor (2) and that the latter can be
20 cooled by the coolant.

3. Turbine (1) according to Claim 1 or 2,

wherein

the channel is an annular channel (20) formed coaxially to the rotor
25 (2) and through which the coolant flows, the external channel wall
(30) of which, radially facing the combustion chamber (5), is torque-proof and thermally insulates the channel from the combustion chamber (5).

30 4. Turbine (1) according to one of Claims 1 to 3,

wherein

the torque-proof internal channel wall is at a distance from the surface of the rotor (2).

5. Turbine (1) according to one of Claims 1 to 4,
wherein

the liquid can be introduced into the annular channel (20) by means
of a nozzle (28).

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6. Turbine (1) according to one of Claims 1 to 5,
wherein

the liquid is water, in particular distilled water.

10 7. Turbine (1) according to one of Claims 1 to 6,
wherein
the coolant is compressor outlet air.

15 8. Turbine (1) according to one of Claims 1 to 7,
wherein
a flow channel downstream of the compressor outlet in the direction
of flow of the compressor air contains a diffuser rib (25) passing
through said flow channel.

20 9. Turbine (1) according to Claim 9,
wherein
the radially external end of the diffuser rib (25) is secured on the
stator of the turbine (1) and the radially internal end opposite the
external end faces the rotor (2).

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10. Turbine (1) according to one of Claims 1 to 10,
wherein
the internal wall (29) and the external channel wall (3) are
supported by means of support ribs on an internal housing of the
30 turbine (1).

11. Turbine (1) according to Claim 9, 10 or 11,
wherein

at least one rib is hollow and a pipe (26) runs in it which on the stator side communicates with a source of liquid and on the rotor side with the nozzle (28) used to introduce the liquid in the annular channel.

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12. Gas turbine with a turbine (1) according to one of the preceding claims.